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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/804,817

03/13/2001

Richard D. Harris

99AB198

2042

7590

01/15/2004

Rockwell Technologies, LLC
Attention: John J. Horn
Patent Dept./704P Floor 8 T-29
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Milwaukee, WI 53204

EXAMINER

GLENN, KIMBERLY E

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/804,817

Applicant(s)

HARRIS ET AL.

Examiner

Kimberly E Glenn

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3 and 4. 6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

The information disclosure statements filed 2/4/02 and 4/29/02 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. Copies are needed for the non patent literature documents listed on both IDS.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-22, 26 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitations "the first portion" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 1 recites the limitations "the second portion" in line 13. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

Claims 1, 2, 6-27 are rejected under 35 U.S.C. 103(a) as being obvious over Knieser et al US Patent 6,583,374.

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The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

The primary reference, Knieser et al disclose in claims 1-17, a micro-electro-mechanical isolator comprising a substrate 42; an beam 20 supported by the substrate for movement between a first and second position with respect to the substrate, an actuator 12 attached to the first portion of the element 20 to receive an input electrical signal and exert a force dependent on the input electrical signal urging the element toward the second position; a bias structure 14 (control element) attached to the element to exert a predetermined opposite force on the element urging the element toward the first position; and a sensor 18 attached to the second portion of the

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element to provide an output electrical signal indicating movement of the element between the first position and the second position. The sensor 18 is selected from the group consisting of a capacitive sensor, a piezoelectric sensor, a photoelectric sensor, a resistive sensor, and an optical switching sensor. The actuator 12 is selected from the group consisting of: an electrostatic motor, a Lorenz force motor, a piezoelectric motor, a thermal-expansion motor, and a mechanical-displacement motor. The bias structure 14 is selected from the group consisting of: an electrostatic motor, a Lorenz force motor, a thermal-expansion motor, a mechanical-displacement motor, and a mechanical spring. The beam attached to the substrate for sliding motion between the first and second positions. The beam moves with respect to the substrate along a longitudinal axis and including flexing transverse arm pairs attached at longitudinally opposed ends of the beam to extend outward therefrom to support the beam with respect to the substrate. The flexing transverse arms 46 attached to the substrate at points proximate to the beam and where the flexing transverse arms include: (i) cantilevered first portions having first ends attached to the beam and second ends attached to an elbow portion removed from the beam; and (ii) cantilevered second portions substantially parallel to the first portions and having first ends attached to the substrate and second ends attached to the elbow portion; whereby expansion of the first portion is offset by substantially equal expansion of the second portion to control the amount of stress in the beam. The flexing transverse arms 46 attach to the substrate through a spring section allowing angulation of the end of the transverse arm with respect to the substrate. The beam and transverse arms are symmetric across a longitudinal axis. A magnetic field crossing the beam and wherein at least one flexing transverse arm pair is conductive to receive an electrical signal and exert a force dependent on the electrical signal urging the beam toward a

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position. Transverse extending primary capacitor plates 66 attach to the beam and extending outward from the beam proximate to secondary capacitor plates 68. The effective area of the primary capacitor plates is equal across the longitudinal axis of the beam. The capacitor plates attach to the beam between the attachment points of at least two of the flexing transverse arm pairs. The primary capacitor plates 66 are positioned with respect to the secondary capacitor plates 68 so as to draw the primary capacitor plates toward the secondary capacitor plates on one side of the beam while to separate the primary capacitor plates from the secondary capacitor plates on the other side of the beam with a given motion. The primary capacitor plates are positioned with respect to the secondary capacitor plates so as to draw the primary capacitor plates toward the secondary capacitor plates on both sides of the beam with a given motion. The beam includes a first and second micro-machined layer, the first of which is insulating to provide the portion of electrical insulator in a region where the second layer is removed. The portion of electrical insulator 34a of the beam is between the actuator and the bias structure. The portion of electrical insulator 34b of the beam is between the bias structure and the sensor. A second sensor 74 is included at the first portion of the element to provide a second output electrical signal indicating movement of the element to the second position, the second output electrical signal being electrically isolated from the output electrical signal. A second actuator 76 is included at the second portion of the element to receive a second input electrical signal and exert a force dependent on the second input electrical signal urging the element toward the second position. (Figures 1-3 and 7)

Knieser et al further discloses in claims 20-22, an isolated circuit module comprising: a substrate 42; a plurality of interconnected solid state electronic devices formed on the substrate

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into an integrated circuit having input and output points; a mechanical digital isolator also formed on the substrate and electrically attached to at least one of the integrated circuit input and output points, the mechanical isolator including: an beam 20 supported by the substrate for movement between a first and second position with respect to the substrate, where at least a portion of the beam between a first and second location on the element is an electrical insulator 34a to electrically isolate the first and second locations from each other; an actuator 12 attached to the first portion of the beam to receive an input electrical signal and exert a force dependent on the input electrical signal urging the element toward the second position; a bias structure 14 attached to the element to exert a predetermined substantially fixed force on the element urging the element toward the first position; and a sensor 18 attached to the second portion of the element to provide an output electrical signal indicating movement of the element to the second position, the output electrical signal being electrically isolated from the input electrical signal; whereby an input signal of above a predetermined magnitude overcomes the fixed force to cause the element to move rapidly from the first to the second position. The actuator of the mechanical isolator is attached to at least one output point of the integrated circuit. The sensor of the mechanical isolator is attached to at least one input point of the integrated circuit.

Thus, Knieser et al is shown to teach all the limitations of the claims with the exception of MEMS isolator being an analog isolator.

Knieser et al states that the sensor can be a capacitive sensor, a piezoelectric sensor, a photoelectric sensor, a resistive sensor, and an optical switching sensor; the actuator can be an electrostatic motor, a Lorenz force motor, a piezoelectric motor, a thermal-expansion motor, and a mechanical-displacement motor and the bias structure can be an electrostatic motor, a Lorenz

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force motor, a thermal-expansion motor, a mechanical-displacement motor, and a mechanical spring. The present invention also discloses that same listing for the sensor, the actuator and the control element. Therefore one of ordinary skill in the art at the time of the invention would have found it obvious to operate the sensor, actuator and control element with either analog or digital signals.

The motivation for the modification would have been provide the appropriate signal for external devices.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1,6-27 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim1-17, 20-22, 28 and 29 of U.S. Patent No. 6,583,374. Although the conflicting claims are not identical, they are not patentably distinct from each other because the Knieser et al reference and the present application both discloses a micro-electro-mechanical isolator comprising a substrate; an element supported by the substrate for movement between a first and second position with respect to the substrate, where at least a portion of the element between a first and second location on the element is an electrical

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insulator to electrically isolate the first and second locations from each other; an actuator attached to the first portion of the element to receive an input electrical signal and exert a force dependent on the input electrical signal urging the element toward the second position; a bias structure attached to the element to exert a predetermined opposite force on the element urging the element toward the first position; and a sensor attached to the second portion of the element to provide an output electrical signal indicating movement of the element between the first position and the second position. The Kneiser et al reference and the present application differ only with the present application disclosing an analog isolator and the Kneiser et al reference disclosing a digital isolator. The limitations of the claims do not breath life into the phrase "analog isolator"

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly E Glenn whose telephone number is (703) 306-5942. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (703) 308-4909. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

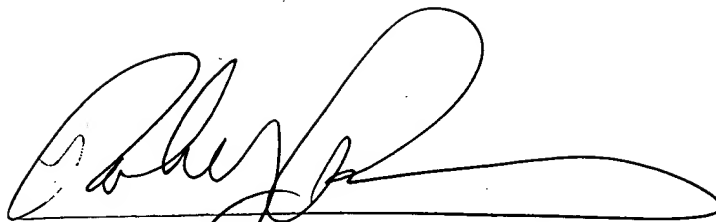
Kimberly E Glenn
Examiner
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A handwritten signature in black ink, appearing to read 'Robert Pascal', written over a horizontal line.

Robert Pascal
Supervisory Patent Examiner
Technology Center 2800